Abstracts

High-performance double-recessed InAlAs/InGaAs power metamorphic HEMT on GaAs substrate

D.-W. Tu, S. Wang, J.S.M. Liu, K.C. Hwang, W. Kong, P.C. Chao and K. Nichols. "High-performance double-recessed InAlAs/InGaAs power metamorphic HEMT on GaAs substrate." 1999 Microwave and Guided Wave Letters 9.11 (Nov. 1999 [MGWL]): 458-460.

Double-recess power metamorphic high electron mobility transistors (MHEMTs) on GaAs substrates were successfully demonstrated. The In/sub 0.53/Al/sub 0.47/As/In/sub 0.65/Al/sub 0.35/As structures exhibited extrinsic transconductance of 1050 mS/mm and breakdown of 8.3 V, which are comparable to that of the InP power HEMT. Excellent maximum power added efficiency (PAE) of 60.2% with output power of 0.45 W/mm and record associated power gain of 17.1 dB were realized at 20 GHz. A maximum output power of 0.51 W/mm has also been demonstrated with the device. This is the first demonstration of high-efficiency K-band power MHEMT's.

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